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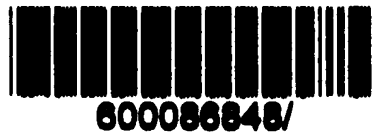
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The History of the Charvolant or Kite Carriage



Containing an interesting description of some of the numerous excursions enjoyed by its use.

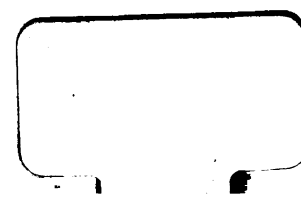
With illustrative designs, by David Cox and drawn on stone, by Rose Gilbert

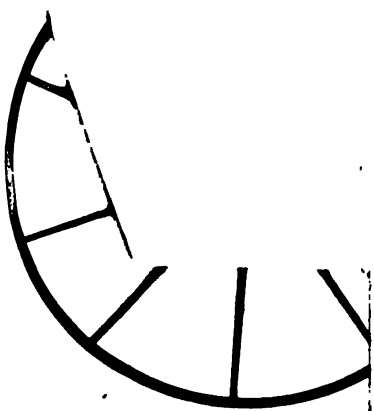

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A TREATISE

ON

THE ÆROPLEUSTIC ART,

Or Navigation in the Air,

BY MEANS OF

KITES, OR BUOYANT SAILS:

WITH A DESCRIPTION OF THE

Charvolant, or Kite Carriage.

AND CONTAINING NUMEROUS MOST AMUSING AND INTERESTING ANECDOTES CONNECTED WITH SEVERAL EXTRAORDINARY EXCURSIONS BOTH BY SEA AND LAND.

With Characteristic Illustrations, Drawn on Stone,

BY ROSE GILBERT,

FROM DESIGNS BY DAVID COX, JUN.

LONDON:
LONGMAN, BROWN, AND CO., PATERNOSTER ROW.

M.DCCC.LI.

268. c. 237.

THE BUOYANT SAIL.

INTRODUCTION.—THE WIND.

"Oft sighing soft among the tree-tops high,
In melody so sweet and mournful heard,
As though some angel, touched with human grief,
Soothed the sad mind. Yet oft, with wildest might,
They rive the yielding bark or battlement,
And lend the tempest wings."

As the grand moving principle of the Æropleustic science is the WIND, we shall introduce the subject of our treatise by a few brief remarks on that element. The wind is air in motion, than which nothing in nature can become more terrific, nothing more serviceable. By its impetuous rage, tower and palace are riven, and totter to the dust; the oak is shivered into a limbless trunk; and the most potent works of man crumble into ruins: while heaven, earth, and sea are filled with devastation. Then it is that the proud eagle is dashed from her rocky eyrie, and the wreck of the tall vessel strews the ocean. Yet of what infinite service, and how delightful are its suavities. Wafted by its gales, and fanned by its breezes, com-

merce and pleasure career over the billows, and all nature is gladdened. Of such importance are all its movements, that to explore the laws by which it is regulated has been the pursuit of philosophy for many years. Its sudden and its gradual risings—its uncertain and its periodical returns—its regular and its fluctuating courses—its repose and its fury—are phenomena which have forced themselves upon the mind, and have led thinking men to search for their mysterious causes. Of these not a few have been discovered; and we may now anticipate the scientific development of the sublime theory of the winds, with an accurate synopsis of their universal economy. But that which affects mankind is their appropriation of this element, of which all nations have more or less availed themselves, in proportion to their scientific acquirements, their philosophical tendencies, or their acquaintance with the principles of mechanism. This mighty agent has been successfully employed in winging navies, and all the multitudinous craft of the ocean; and in giving revolution to machinery on land. Yet there are territories, rarely explored, traversed by this irresistible power, where a sail was never unfurled, where mechanism was never introduced, and where invention never spread a successful pinion. These are the higher regions of the atmosphere, where, when the winds sleep below, there are powerful and steady currents rapidly floating. These have hitherto passed almost unnoticed, because their lofty career has placed them far above human control. Seamen have often felt chagrined when they have viewed the light clouds scudding swiftly aloft, while not a single breath would stoop even to their sky-sails. But as this

subject will come under its proper head, we shall close these remarks by observing that, though powers cannot be confined to earth, mechanism may ascend, and embrace their services.

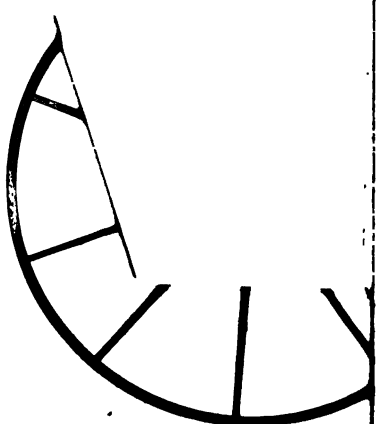
THE ORIGIN AND PROGRESS OF THE INVENTION.

"DOGE. Some thirty years ago—it seems to me
As fresh as yesterday—being then a lad
No higher than my hand, idle as an heir,
And all made up of gay and truant sports,
I flew a KITE, unmatch'd in shape or size.
It soar'd aloft,
Soar'd buoyantly, 'till the diminish'd toy
Grew smaller than the falcon, when she stoops
To dart upon her prey."

FOSCARI, a *Tragedy.*

WHEN a boy, the inventor of the BUOYANT SAIL amused himself by attaching to the string of the common paper kite a stone, which it would rapidly draw along the ground; by experiment, he found that if the stone was very light, the kite would fly swiftly away with it, and thus, unduly ballasted, would soon fall to the earth. By attaching a stone of heavier weight, a diminished speed was obtained, and the kite continued floating at an uniform height. Greater elevation was soon after obtained, by fastening to the back of a second kite the end of the first kite-string, and the draught-power of the


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Shewing by Ma

the more did the kite; by letting out this line, however, (whose use we shall shortly notice) this increase of power at once subsided, and the party were placed at their ease.

EARLY USES OF THE COMMON KITE.

ANTECEDENT to the present invention, the boys' toy, the paper kite, had suggested several experiments for its application to valuable purposes. A Franklin was buoyed up and wafted by it in safety over the surface of a pool; at an after period, that ingenious electrician employed it as a vehicle for the lightnings, by which he could draw them in safety from the sky, and conduct them to the depot of his batteries, charging and exploding them at pleasure. This sublime use made of the kite, has certainly given it a degree of immortality, being attached to the name of that great philosopher, and mentioned in the list of his transcendant experiments. So invariable has been its general association with puerility, that a general impression has been made of its uselessness; its practical and scientific character, it is hoped, will now redeem this mechanical agent from this unworthy stigma. That Buoyant Sails have never been brought into actual service is most certain, or ancient history would have preserved some record of their existence, which would have besides been confirmed by some of the numerous

relics of art still subsisting. A sufficient cause of this silence, both in the ancient and modern world, may be found in the slight knowledge evinced of the principles and tendencies of this mechanic power; or their practical application must have encountered insurmountable difficulties.

THE CONSTRUCTION, MANAGEMENT, AND POWER OF THE PATENT KITE.

THOUGH the shape may vary, the Pilot, or uppermost kite, should be of the common, or circular-headed form. The peculiarities of the invention are these:—The Kite is made to fold up; the standard is divided into two equal lengths, or, if the Kite be very large, into three; the wings have hinges at the head of the standard, and, if of large size, each wing is divided into two parts, having a second pinion-joint. For the flight-band two lines are used; the upper stationary, the latter, termed the brace-line reeves through an eye in the upper line, both of which are continued down to the hand of the conductor. By hauling on the brace-line, the Kite is brought up to the wind in its full action, approximating more nearly than before to a perpendicular to the earth; by slackening the brace, it floats inactively on the wind; and thus, its power is instantly increased or lessened. By the same means, the Kite is elevated or lowered at pleasure, soaring or sinking in proportion as the

varying angles are formed by the Kite's surface. Another branch of this system consists in the application of two side-braces, the one attached to the right, the other to the left-hand extremity of the Kite. These have an action similar to the reins of a gig-horse. By straining upon the right-hand brace, an obliquity is given to the Kite's surface, on which obliquity the wind acting, the Kite veers instantly to the right-hand; by hauling on the larboard brace, the action is reversed. By this movement the traverse is performed, trees and other obstacles avoided, and many advantages gained. By the invention of a back-band, a tandem-equipage of indefinite power is obtained, and these Buoyant Sails elevated to a vast height.*

THE POWER OF THE PATENT KITE.

THE power of a kite twelve feet high, with a wind blowing at the rate of twenty miles an hour, is as much as a man of average strength can stand against. With a stronger gale, such a kite has been known to break a line capable of sustaining 200 lbs. The surface spread by this sail is forty-nine square feet, and it should be noticed that these serve as standing ratios, from which, by the rule of proportion, the power of

* The Kite used for travelling may be seen in action in the grounds at Goodenough House, Ealing, Middlesex.

larger kites can be calculated. We must not, however, suppose that a kite of thirty-six feet in length, has only three times the power of a kite twelve feet in length; for, in fact, it has three times the power in length, and three times the power in breadth, which will make the multiple *nine;* so that it would lift or draw nine times as much as a kite of twelve feet. Two kites, one fifteen feet in length, the other twelve, have power sufficient to draw a carriage with four or five persons when the wind is brisk.

The foregoing descriptions will furnish exercise for imagination, suggesting to the active and ingenious mind, the appliance of the system to a variety of purposes consonant to his own train of thinking; its adaptations, which are exceedingly numerous, shall now be noticed under the following heads:—

1st. Its adaptation to novel and maritime enterprise.

2nd. Its utility in the military career.

3rd. Its advantages in crossing rivers, and various uses which the narrative will point out.

MARITIME ADAPTATION.

1st. THEY will serve as auxiliary sails to merchantmen and yachts. After spreading all the canvas possible in the usual



CREW SAVED BY MEANS OF THE KITES

way, very considerable power may be added by the application of these Buoyant Sails as auxiliaries; and this power may be so attached as to counteract the injurious pressure which a crowd of canvas is known to occasion, not unfrequently causing an undue dip of the vessel on its lee; for let it be remembered that the draught-power of these sails, while aiding progress, is also exerted in buoying up the vessel—an advantage which the skilful navigator will know how to appreciate and apply. Again, there are seasons when common sails are of no use to a vessel; for it frequently occurs that there is wind above, when none stirs below, the gale dying away at sunset which during the day was very brisk. The mariner knows by experience that it first forsakes him upon deck, till presently, as it still continues creeping upwards, he derives not the least benefit, except from a light breeze in his sky-sails, and that too finally departs. But where has it flown? This is not generally known; for on such calm and clear evenings nothing is seen moving in the atmosphere, and all around and above appears to be in a state of perfect quiescence. This, however, is far from being the case; for it is experimentally known to us that, on such an evening, just in proportion as the wind dies away below, its action is generally quickened above; and, from numerous practical trials, we have found that, at the height of about two hundred yards in the atmosphere, there is a steady current of air actively flowing at the rate of sixteen miles an hour, when there is not a breath below.

This powerful stream of air flows generally from sunset to midnight, and sometimes runs into the next day. With this

knowledge, the wary seaman will sail his pilot-kite before sunset, to which he may add as many as may be necessary. It is there, then, where the proudest mast never raised its aspiring head, nor the loftiest pennant flew, at a height that sea-boy never ascended, that a surface of canvas may be spread with an effect and power hitherto not understood.

Numerous successful experiments have been made with the Buoyant Sails attached to boats, &c. Some few years since the inhabitants of Portsmouth and Gosport assembled on the beach to witness one of the trials. The barge of the Victory having been kindly offered for the purpose, Lieut. B———, with a boat's crew, accompanied by the inventor and two of his sons, embarked at South-Sea Beach; the Kites used on this occasion, were a 12 feet Pilot, and 20 feet Draught Kite. A fine breeze was blowing at the time, and, amidst the shout of the spectators, the barge proceeded on her course. Nothing could exceed the astonishment depicted on the countenances of the boat's crew, not a word escaped the lips of either for some time, until the boat, having distanced not only sailing vessels but steamers also, one old veteran gave way; and thundered out one of those peculiar nautical phrases, the substance of which we leave to the imagination of the reader. Steering for Ryde, in the Isle of Wight, the boat proceeded rapidly on her course, and quickly approached the shore. The pier was crowded with people, who had been attracted by the novelty of the spectacle, and when the barge touched the sands, a general rush was made towards the spot, to examine the appliances. Wonder was displayed in each countenance, and many



SUCCESSFUL SAIL FROM PORTSMOUTH TO THE ISLE OF WIGHT.

were the inquiries respecting the management of the Kites. Since this period, many aquatic excursions have been made, and a description of one at the close of this treatise cannot fail to interest the reader; indeed, there is no doubt as to the practical utility of these Buoyant Sails. On the occasion referred to above, many naval men, who had seen considerable service, expressed their opinion that the Kites might be rendered very efficient on board ship, particularly for signals, and in cases of shipwreck. It would be well to mention a circumstance here, in illustration of statements which have been introduced concerning the frequent failure of the wind below, when there is a good breeze aloft.

The master of a fishing-smack purchased a set of the portable Kites, and took them with him to sea. It happened that on his return from his trip, his vessel, well laden with fish, and being in company with several smacks similarly circumstanced, he found the wind failing towards the close of the day; the thought of the Kites immediately suggested itself to his mind, and without delay he had them raised to a considerable height, and experienced the truth of the statement which he had received respecting them, for immediately the Kites gained the influence of the current above, the craft bore away from the fleet, and, with her cargo, arrived in the harbour several hours before her numerous consorts, and by this means the master realised a considerable profit.

USES IN CASES OF SHIPWRECK.

To convey a rope on shore in cases of shipwreck is of the utmost importance. For this purpose, a Storm-kite has been recommended; but from the description given of it, its practical application is impossible. It has been proposed to fasten a small anchor to the Kite's tail; the surest method of preventing the proper action of the Kite. In order to drop this anchor, when suspended over shore, the string of the Kite was to be let out suddenly, that the whole might drop together to the earth. In this case, the chances of the grappling-iron taking hold are small indeed; and if this effort is not successful, no second attempt can be made with that Kite. Now the Patentee's Kites are unfurled and ready instantly; great weights may be suspended at a very considerable elevation, and they may be raised and lowered at pleasure, till hold is taken by the grapnel. Kites of the ordinary structure can only fly in the direct course of the wind; these may be veered, and dropped to the right or left of the wind's course, at a very considerable angle; and thus, should not the anchor hold in one spot, it may be raised and let down in another, till a proper hold is obtained. Should it, however, be deemed more expedient at once to send a person on shore with a rope, he may be borne above the bursting billows, and alight safely upon the cliff or beach, according to the relative situation of the wreck. Again, it might so chance that even a rope would not render all that aid which circumstances required; for should female passengers and children be among the shipwrecked, what mode could be so desirable as to swing them securely in a

hammock, and thus transport them with rapidity and ease over the spray of the wildest sea? In the same way, every one of the crew might be landed. Should shipwreck occur at a very considerable distance from land, a patent kite would safely tow several men ashore. Again, in cases where ships founder at sea, this invention would prove of varied and important service. These Buoyant Sails would bear up and draw a small craft, preventing it from rolling, or turning over; serving at once for a sail and signal of distress—a signal so elevated and conspicuous as to attract very distant observation. Again, with the cord of a kite fastened beneath the arms, an individual would not only be supported for hours, but be wafted within reach of help, or safely reach the shore. This invention would also be of the greatest service for ASCENSION AT SEA. By the Buoyant Sails, a seaman might ascend to a vast height, and, with a powerful perspective, sweep the horizon for an immense distance. Hostile fleets might be descried, or the shore discerned, long before an observer from the tallest mast-head could gain the same advantage. The experienced mariner may suggest their application to purposes of great importance, totally unknown to the mere landsman.

In reading the various melancholy accounts of shipwrecks, scarcely one is to be met with in which the application of this system would not have been serviceable, and, in many instances, would undoubtedly have been instrumental, in saving whole crews. How many have perished in open boats and rafts—how many on rocks, barren sands, and uninhabited islands —for want of some elevated signal of distress! These Buoyant

Sails, with the requisite apparatus, should always be kept on shore near rocky coasts; for though the wind generally blows towards the land when accidents take place, yet, in cases of an oblique direction, these Kites might frequently be veered, so as to render assistance. The innumerable uses to which they may be applied at sea, rendering multifarious assistance to the marine department, no one can as yet point out. Sufficient, however, has been suggested to set thinking the ingenious mariner. The more he dwells upon the management of the Buoyant Sails, the more discoveries will he make for their regular and their casual application. Let him not forget that they are portable—that they occupy small space—that they are instantly equipped to ascend—that their power can be increased, or lessened in a moment—that, while floating in the air, they can be veered either starboard or larboard, with a despatch, of which, without trial, he can have no conception—that he can elevate or lower them at pleasure—and, above all, let him understand that they will bear him safely aloft. Let him be acquainted with these facts, and he will discover the facilities by which he may land himself, or others, on the summit of the highest rock; raise or lower himself; glide over the surface of the billows; afford to others hope where none was before; and rescue when death rode victorious on the whirlwind. Thus, with a clear conception of the principle, he must be convinced that this union of buoyancy and traction will prove no small acquisition to the sea service.

SIGNALS.

FOR the signal service, they are of immense importance. At what a vast distance a black flag might be seen, as a signal of distress—not only on the open sea, but ashore—is evident. To the inland inhabitants it would convey not only the intimation of distress, but guide them to the very spot where their humanity would be welcome. Signals of every kind, for every purpose, might, by this mode, be made with greater distinctness than by any other; an advantage ensured by their complete detachment from the vessel, and their commanding elevation. The largest flags could be displayed at an immense height, and the Admiral's signals be made in the smoke and confusion of an engagement. Night signals of the most efficient nature, and of the greatest variety, can be hoisted to the clouds. Model forms, twelve feet in circumference, have been invented, which, if required, fold up in one moment, occupying only four inches in diameter, and weighing but six pounds. This principle established, its application is as extensive as the Admiralty or Marine Society could desire, by whom a general regulating code might be published for the inhabitants of the sea-board.

MILITARY USES.

THESE Buoyant Sails, possessing immense power, will, as we have before remarked, serve for floating observatories. They

will also prove most formidable in cases of escalade. With an efficient flight of these powerful engines, a whole battalion may be placed in silence on the most lofty rock or mountain fortress. In the dead stillness of the night, shrouded by its gloom, a lodgment may be effected on the most impregnable battlements. In other cases, guns may be mastered for such a time as would enable a supporting corps to advance to the support of the storming party, or a single spy might, by the mysterious agency of these Kites, gain valuable information of the interior state of fortresses. Elevated in the air, a single sentinel, with a prospective, could watch and report the advance of the most powerful forces while yet at a great distance; he could mark their line of march, the composition of their force, and their general strength, long before he could be seen by the enemy. Hedges, forests, houses, and the minor irregularities of the earth's surface, would offer not the slightest obstruction to his view. Either in pursuit or advance, from the flying observatory, could he mark all the movements and manœuvres of an enemy. Even though destitute of boats, a *corps d'élete* might be transported across a river in safety, and with a rapidity with which no steamer could compete. Almost every invention is susceptible of improvement, affording scope for ingenious experiment. To none does this apply with greater force than to this branch of ærial navigation. What an endless variety of experiments might be made by military officers, especially the young and active in that honourable profession, and by such training how skilful would they become in the numerous manœuvres of which the system is susceptible. Again, how instructive would be the

trial of various methods of ascertaining the very swiftest rate of travelling, how satisfactory to ascertain the exact spread of canvas required for draught or traction—to calculate the additional power required for travelling on bad roads or up hills, for competition in running with or against the wind at various angles of traverse by several equipages in simultaneous motion—to decide, by experiments, under what circumstances Kites of a heavy or slender construction would be most eligible for making progress —to discover the best mode of manœuvring, in order to overcome difficulties, such as the passing of lofty trees, high towers, or pinnacles, the adoption of the best plans for the effectual prevention of accidents when ascending in the air or alighting on the earth—to determine exactly how far larboard or starboard these Buoyant Sails might be veered, with a given length of cordage, and a pressure of different weights. These, and a multiplicity of experiments, would afford military men an endless source of exercise, qualifying them for the performance of exploits, of which, at present, they have no conception.

But the most extensive sphere of action, presents itself on the surface of the majestic ocean. There, how frequently when lying at anchor or when under easy sail, endless advances might be made in the application of this æropleustic discovery. These we leave to the practical hand of the experienced mariner. We may, however, suggest, that were a Charvolant and suite of Kites introduced into military and naval establishments, nothing would afford such a zest in recreation, nothing lead to such healthy and hardy exploits as the manœuvres of traction, draught, and transposition, under this system. Wherever introduced, manli-

ness would succeed effeminacy, and courage triumph over fear; for who will not agree with Fuller, that "amusements like these are excellent exercises, and that manly sports are the grammar of military performance?" The national establishments of Chelsea and Greenwich are excellent theatres for experiment among the sons of those seamen who have rendered "the spangle of the wave" honoured, and the children of those soldiers who have made the banners of their country redoubtable. But not only for the aspirants for military or naval fame is this system available; for the day may not be far distant when, this system having been proved perfectly safe and delightful, ladies themselves, "winged like those from Heaven," shall be seen making the transit of our rivers, leaving boats and bridges to the less ambitious inhabitants of the earth, and thus enable us to boast that we have our fair and flying islanders.

TRAVELLING.

"Posting upon the couriers of the air."

ONE of the most pleasurable purposes to which Kites may be applied, is that of travelling; and, it may be added, perhaps ere long the most useful of all, when applied practically to some foreign countries. But, before this subject is noticed, it may be proper to give a description of the Charvolant, which, constructed expressly for these Buoyant Sails, has the following

peculiarities:—First. Before the charioteer is an upright spindle, surmounted by a T handle; the lower part of this handle, which runs through the bed of the car, is square, fitting into the socket of a small, solid, horizontal wheel, round which a strap passing communicates with another horizontal wheel, fastened to the pivot of the front axletree. By this apparatus, termed the "Guide," the chariot is directed with the nicest precision. Second. There is a regulator or drag in the hinder part of the car, suspended by a spring. The shoe of this drag is pressed by a lever power upon the ground, by which too great a velocity is prevented, or the vehicle instantly stopped, if requisite; this is effected without alighting. There are several minor appendages not common to other carriages, as a reel, and places for the chronometer, mariner's compass, &c. This car, having moveable shafts, may be used with horses, precisely the same as other carriages.

THE CHARVOLANT IN TRAVERSE.

MANY who give credit to the practicability of this system cannot conceive how a car drawn by these Buoyant Sails can travel, except the wind be exactly in the direction of the road; nor can they fancy the possibility of making any progress with a side-wind, nor the power of beating up against it. How to run in these various courses shall now be shown. Every one knows that the wheels of a car will revolve when an adequate draught-power is applied directly in a line with it, as

in the case of a horse drawing in the shafts. If taken, however, from the shafts, and attached to the side of the vehicle, with the draught at right angles, it could not be moved. But no sooner is the horse turned a trifle from that angle, with an inclination to the line of road, than the carriage moves; not after the horse indeed, but in the exact direction of the front wheels. All, therefore, to be done is to guide the front wheels, when of course the carriage progresses, though the draught-power forms an acute angle with the line in which progress is making. But what is to be done in the case of a right-angled wind? That subtle power is not subject to any human training, nor can it be inclined a hair's-breadth from its appointed course: but the Kite may, by means of the starboard and larboard traces. By these, an obliquity may be given to the Kite's surface, right or left; and thus the angle of incidence is formed, on which the wind acting produces the traverse. By this method, therefore, the power is placed to draw at an angle favourable to the desired course. Thus, whatever road the car may travel by a side-wind, the same road it may return by the same wind; and where there is space for traverse, as on plains or downs, it is possible to beat up against the wind.

But, knowing how frequently verbal descriptions fail of giving clear ideas, especially of unusual inventions, we have given a profile drawing of the Charvolant, with a delineation of the various tracts of traverse, and the paces of travelling. This car, though now possessing no complications of machinery, was not brought to its present state of simplicity without some little contrivance to avoid them. Its peculiar structure originated



TRAVELLING IN DIFFERENT DIRECTIONS BY THE SAME WIND.

more in the nature of the accommodations required for its management and movements than from the general principles of chariot building. Coach-builders and connoisseurs may condemn the distance between the front and hinder axles, on the supposed principle of heavy draught; but let it be observed that there are no horses to distress, for the winged Pegasi harnessed to this machine are not inconvenienced either by weight, hills, or speed; and after all the objections which have been made to the horse's distance from his draught, these ærial steeds never flag, while their wind holds good though the traces which connect them with their work are *three hundred yards long*. The reasons for the unusual length of the Charvolant are, that it is far less liable to overturn in backing, wheeling, or travelling swiftly; for experiment has proved that a short carriage, moving at the rate of twenty miles an hour, cannot be kept from an oscillation exceedingly unpleasant and dangerous. These objections are obviated by a greater length of carriage.

We shall now briefly remark on the speed and force of the winds :—

	PACE. *Miles per hour.*	DRAUGHT-POWER. *Cwt.*
A gentle breeze	4 to 7	4
A pleasant gale	8 to 15	6
An active gale	14 to 18	7½
A brisk gale	18 to 24	9½
A high wind	40 to 50	12
A storm	60 to 70	No experiments have yet been made for travelling, with a wind exceeding 40 miles an hour.*
A tempest	80 to 90	
A hurricane	100 to 120	

* The draught-power is calculated from experiments made with a four-wheeled car, weighing two cwts. and drawn by two Kites, spreading a surface of one hundred square feet. It may be satisfactory to know that it is possible to travel up-hill as rapidly as on level ground.

The winds, which move from eighty to one hundred miles an hour, dismantle towers and tear up trees, strew the agitated ocean with wrecks and the sands of the shore with spoils. It is then that the stormy petrel skims over the boiling deep, and the white coursers of the sea chafe themselves into pale foam.

FOREIGN COUNTRIES.

As an introduction to that portion of the subject now to be treated of, it may not be improper to mention the terms under which the winds in different parts of the world are classified.

Erratic or *variable winds* are those the coming and continuance of which cannot be depended on. Such are usual in England and other countries of a similar latitude. In the regions of the globe within and near the tropics, there are winds of three particular classes, designated, *Constant*, *Periodical*, and *Alternating*.

Constant winds are those which always move in the same direction: such are the trade winds.

Periodical winds blow during part of the year from one point, and at another directly the opposite way: such are the monsoons, which course to and fro on the Indian Ocean, and over considerable tracts of land in Asia and Africa.

Alternating winds are those which blow in the morning one way, and return again in the evening. As these are generally found near the coasts, they are termed sea and land breezes.

In those latitudes where any of these three last-mentioned prevail, and in every place where winds may be calculated upon, there a uniform dependence may be placed on the Kites, and there they cannot fail to be extensively useful.

What incalculable service may this Æropleustic art render to those who traverse the sandy deserts of Arabia, Africa, and parts of South America! Some of these trackless territories stretch on a level for thirteen hundred or two thousand miles, and in all these places the heat is excessively oppressive, and animal labour distressing. Parched and overcome by the torrid blaze of the climate, and heavily laden with many a tedious day's provision, how slow is the progress of the caravan over those barren and burning sands!

Who knows, then, but by the aid of this system these deserts may be navigated with a celerity never before known? Nor tree, nor bush, nor envious rock oppose obstacles to our progress, and many, many miles together our winged steeds may uninterruptedly cleave their way.

> " Tum cursibus auras,
> Provocet, ac per asserta volans, seu liber habenis
> Ægnora vis summa vestigia ponat arena."

There are also periodical winds, the approach and continuance

of which may be calculated to a day, whose courses are established by the undeviating laws of nature. What enthusiastic rapture would it afford to the first intrepid adventurer who should cross Zaara, or the Great Desert, from Egypt to the Atlantic; and, if travellers be correct, there is certainly some room for hope that much may be effected by means of Kites in these dreary regions. Some celebrated geographers observe that across this immense Desert, from the shores of the Atlantic to the confines of Egypt, a space of two thousand five hundred miles, comprehending a breadth of seven hundred and twenty, there are few interruptions. There is but one simple thing to be ascertained,—Is the surface of this world of waste such as best to admit of wheel carriages or sledges: carriages and sledges not drawn by horses but by Buoyant Sails—sails which lift as much as they draw? At certain seasons of the year, wind is sure to be granted, and adequate power may most certainly be obtained for the purposes of draught. Nothing can prove a serious impediment to successful expeditions, but forests, and very frequent rocks and loose stones. It is conjectured that no kind of sand, however light, would prevent travelling by vehicles drawn by Kites. For want of inland seas or navigable rivers, and public roads from the shores to the centre, almost the whole of Africa remains destitute of civilization, and neither seeks nor invites commercial intercourse. Is it too fond a hope that, by the system of æropleustics, those sands may be navigated as the sea, and thus a most speedy and safe communication be opened between the east and the west of the interior? Concluding that by wheels or sledges made for the express purpose, those deserts may be

traversed; an idea is here given of what modes might be attempted, and, it is propable, be effected. Let a carriage be made that would accommodate six persons, with patent axle-trees, the body of it boat fashion; in case of rivers and lakes an awning might be added, as well as proper conveniences for sleeping. In such a vehicle as this may the traveller take to himself the words of the poet, and say:—

> "O'er the desert as rapid as fast-bounding roe,
> In my bark of the breezes all cheerly I go;
> Not more sudden the rush of the avalanche drift,
> Not arrow more fleet, not the wild horse more swift.
> So forward, my steeds, wing your way through the wind,
> Ye will leave the wild Arab defeated behind."

THE MANAGEMENT OF THE CAR.

CONCLUDING this boat-car made, its management is of easy and pleasant accomplishment. Three persons are sufficient to direct it in rapid motion; consequently, with six on board, a refreshed relay of hands would be always ready, and sleep be alternately enjoyed. Should there be no material obstacles, the periodical winds, which are very active, would take the car from sixteen to twenty miles an hour; but as hindrances might be expected, supposing it travelled only ten miles an hour, the journey of 2,500 across the whole desert would then occupy ten

days and ten hours! Car Kites and equipage, complete for six persons, would cost about £80. With what trifling expense a formidable little troop might be equipped and travel in company!

ELECTRICITY.

SOME apprehensions have been entertained relative to exposure from electric fluid, it being said that cordage has sometimes proved a conductor, especially when saturated with water; however, the writer has attempted to prove it to be so, but has failed. When raining, and when the Pilot Kite has been enveloped in a black electric cloud, and the cordage has been so fastened below as to afford the fairest opportunity for the discovery, no effect whatever has resulted. Wire running up the string, or steel filings worked in with the string when manufactured is a certain conductor; and in the latter case a line of fire will be seen from the uppermost point of the Kite running down to the earth: but should there exist any fear on this subject, a short piece of silk-twist would cut off all communication. A gentleman of Manchester, proprietor of an extensive silk-twist manufactory, having once rode in the Charvolant, kindly presented the inventor with a complete set of silk cordage of several hundred yards in length, a non-conductor that would most assuredly prevent all accidents from the electric fluid.

REGAL PRIVILEGES CONNECTED WITH ÆROPLEUSTICS.

THERE is a peculiar satisfaction in not being detained at the toll-bars. The pains and the penalties which there arrest common travellers, never intercept this celestial equipage. The Charvolant, then, has the distinguished prerogative of conferring this royal privilege; and those who travel by Kites travel as kings. They and their retinue pass the turnpikes free as the descendants of majesty. A most delightful sensation is produced by this proud exemption. The herald-bugle is sounded—the gates fly open—you pass unquestioned—and on looking back, and seeing even the thorough-bred obliged to pull up, to purchase a passage and to procure a passport, it is then, "pride playing a busy tune on your heart-strings," you almost fancy some of the royal blood to be galloping in your veins. Besides, the Charvolant may claim one honour as yet sacred to Majesty. Neither peer nor prince may travel with more than three pairs of horses; but a whole troop of these ærial steeds may be harnessed to the flying car. Thus, then, a private gentleman may travel legally and regally through the whole kingdom. However, on one occasion, an old, inquisitive, lady-like turnkey refused to open the gate to a party with the Charvolant. Hearing a carriage rattle up to the bar, she ran hastily out; but, on seeing no animals attached to the vehicle, she started and stared, and after a short pause exclaimed:—"Why, gentlemen, what d'ye go by? what is it that draws you?" The kites were pointed out to her, aloft in the air; and then, and for the first time, she

noticed the lines fastened to the car. "What!" she added, "do they draw you along?—do they indeed! Well, what must I charge you, gentlemen? What d'ye call them?" "Kites—kites!"—"They ben't horses?" "Oh no!"—"Nor mules?" "No!"—"And I'm sure they ben't donkeys, nor oxen!" Then, looking up at her toll-board, she observed:—"Kites—kites? why, there be nothing about kites on my board; so I suppose you must go along about your business!"

Oh, how pleased would old ELWES have been, if Kites and the Charvolant had been in existence in his day! Such an antipathy did he bear to those hated rails, thwarting the King's highway, that, rather than subject himself to the charge for passing, he has been known to leap many a hedge and ditch, and that many a time, for the satisfaction of keeping the penny in his pocket.

These ærial coursers need neither hay nor corn for their sustenance: they, like the camelion, feed upon the air: they do not even require water for their refreshment, and have been known to race sixty miles, on the afternoon of a hot and dusty summer's day, without once moistening their mouths, or dashing from their nostrils, like the steeds of mere earth, the foam-bells of "heat and extreme toil."

It is urged that the invention cannot be employed without wind; and, as that element is not under human command, therefore, neither business nor pleasure can depend upon its services. This certainly is an insurmountable impediment, as regards the adoption of it to the exclusion of other draught or propelling powers. Would the winds come when called for, and could we curb and



KITES! KITES! "WHY THEY BE'ANT UPON MY BOARD"

direct them at pleasure, then we might do with few horses and very little steam. But these gifts of Providence will never be superseded by Buoyant Sails; they will, however, occasionally perform things which neither horses nor steam have ever done, or can do.

As it respects the first objection, it may thus be replied to:—Does it follow, that a thing which cannot always be used should never be used? Surely that would be an absurd conclusion. If we cannot do a thing just when we would, not to do it when we could might be unwise. Ships might be objected to on this principle—that there were sometimes calms, or contrary winds: every argument, therefore, against the use of the Kites and Charvolant will hold good when applied to the use of sailing vessels. That they cannot be employed at all times, just at a person's will and pleasure, is certainly a trifling objection as it respects their application for recreative excursions; for surely there will be a sufficient number of windy days in the course of the year for the purposes of amusement. The exercise of patience is occasionally very wholesome; and to withhold indulgences for a season frequently serves to give a greater zest to enjoyment.

REMARKS ON TRAVELLING BY THE CHARVOLANT.

THE Author does not commit himself by asserting that this mode of travelling is the most pleasurable and safe ever yet discovered, and, with the exception of the steam-engine, the

most expeditious. Mile after mile, in succession, has been performed at the rate of twenty miles an hour, timing it by chronometer in hand. A mile has frequently been performed, over a heavy road, in two minutes and three-quarters. Let it be noticed, that the wind was not furious, neither were the Kites additionally powerful for the bad state of the roads. This speed was also effected with wheels not exceeding thirty inches in diameter: it remains, therefore, for science to calculate, and for experiment to determine, what may be done with wheels of larger dimensions, in a brisker gale, and on better roads.

It may be supposed, by some, that this celerity is dangerous —that it would prevent respiration; but let it be remembered, however, that there is no plunging, no sudden jerks—that the occasional dips and irregularities in the surface of the road are scarcely perceptible. There is no jolting, for the weight is partly supported by the Kites, and the car thus glides over the small hollows into which other carriages sink.

That the swiftness of the movement should almost prevent breathing, is certain, if going against the wind; but when travelling at such a rate, it is with the wind, and thus a perfect calm is enjoyed. One evil, however, it was supposed did arise from its velocity—loss of appetite; for on one occasion, when pulling up at a house of call seventeen miles from Bristol, some little concern was felt by the party when not one of them was disposed to take any refreshment. All, therefore, concluded that the speed with which they had flown over the ground was the cause of this stomachic indifference. However, upon further consideration, it was imputed to another source; for, on looking

at the chronometer, they discovered that their travelling pace, up hill and down, had been sixteen miles within the hour: of course there could be little disposition to hunger so soon after a plentiful repast at home. People must not, therefore, think themselves dying, if, on arriving at London, after a morning's ride of 120 miles, they do not even feel themselves quite ready for dinner; for then, perhaps, it may be only about the time for lunch.

This mode of travelling is, of all others, the most pleasant. Privileged with harnessing the invincible winds, our celestial tandem playfully transpierces the clouds, and our mystic-moving car swiftly glides along the surface of the scarce-indented earth; while beholders, snatching a glance at the rapid but noiseless expedition, are led to regard the novel scene rather as a vision than a reality.

In the evening, when only part of the equipage is visible, and that but for a few moments, the effect is truly sublime. Its unexpected appearance and sudden departure—passing like a shadow—has often rivetted the foot-passenger to the spot, motionless and mute, and taught him to exclaim:—

> "What are these,
> That look not like th' inhabitants of the air,
> And yet are in 't?"

It has happened, too, that after such flights new and strange tales have been told of the Fiend having been abroad: that the Prince of the Power of the Air had certainly been let loose, and was now driving nightly up and down on the earth.

There are certain evenings in which travelling by the Charvolant could not be better described, had DRYDEN known of the invention, and seen it in action, when he said:—

> "In a bright moonshine, when the winds whistle loud,
> Tivy, Tivy, Tivy, we mount and we fly!"

But of all others, those evenings are the most delightful when not a breath is felt below; when all is calm and silent; when nothing of the wind is heard, but its soft play on the Kite's cordage, from the tension of which the sound resembles the changeful note of the Æolian harp. Those nights when LUNA walks in beauty and brightness through cloudless skies, are certainly to be preferred; but the novelty and astounding effect produced are much greater on a dark night: it is necessary, then, to travel with lamps to the car, and at least one transparency suspended aloft on the string of the Kite; which light is to inform the charioteer of the exact direction and angular height of the Kite's string, that he may avoid trees, &c. This leading-star, though serviceable to the director of the expedition, has often caused impediments. The eyes of all on the road have been generally fixed; and waggoners, people with carts, foot-passengers, &c., have been standing directly in the way, and gaping upwards. In general, their backs are towards the Charvolant; for, as the light in the air is always a-head of the carriage, they have turned to look at it, just before the car approached them. This circumstance, together with the swift and silent movement of the carriage, makes the bugle a *sine quâ non.*

That no inconsiderable degree of scepticism has existed on this branch of the Æropleustic art, the following anecdote will evince :—

A gentleman, speaking of the carriage drawn by kites, found the commencement of his narrative excited momentary attention; but the company, as by mutual consent, very soon neglected him. He then, rather warmed, asked the question, if they did not believe him? This produced a titter and a whispering, indicative of contempt. However, being determined that they should be convinced, he assured them that he himself had ridden in the car at the rate of sixteen miles an hour. This completed the wonderful story; all burst into a laugh, and a particular friend of the narrator observed, "Well, my dear sir, I never knew you tell fibs, and therefore must credit your assertion; but if I had seen the thing myself, I would not have believed my own eyes."

SPORTING.

As an accompaniment to the gun, in grouse and partridge shooting, the Patent Kite has been found to answer admirably. When the birds are very wild, the Kite, being elevated and carried by an attendant, is an unfailing mode of keeping them down until put up by the sportsman, who is generally allowed to advance within shot before they take wing. Many gentle-

men have assured the inventor that, on many occasions, without the aid of the Kite, they could not have succeeded in obtaining a shot during a day's walking.

The plan is, to let the Kite fly over the field which you intend to beat, and in no instance has the adoption of this means failed in securing a good day's sport, should the birds be ever so wild.

SUMMER EXCURSIONS.

MANY most pleasurable expeditions have been made with the Kites. The following, descriptive of some of the most interesting, will no doubt prove interesting :—

The party, in the present instance, consisted of twelve individuals, with three equipages complete, each with a tandem of kites; in one, the pilot sail was 8 feet in height, the draught sail 10 feet, this car was manned by two persons only; a second car, of larger size, drawn by a pilot kite 10 feet high and a draught power of 15 feet, carried a party of four; the third Charvolant, of considerable size and weight, was manœuvred by a full complement of six—the respective power of traction, a pilot sail of 12 feet and a draught power of 20 feet. The object was to test the relative speed of those different equipages, and to mark the advantages or disadvantages of weight and compactness—of light and slightly constructed equipments. And certainly, in the whole annals of

racing, never did such buoyancy of spirit and mental exhilaration accompany a competing party. The vivacity of mind and eye—the vigorous keenness of the animated contest—the graceful soaring of the Buoyant Sails of each equipage—the manœuvring to effect the passage in advance each of the other, formed a picture not easily forgotten by any of that cheerful party.

The line of route was the great western road to London, running over the high grounds of Marshfield Downs, through Chippenham, Calne, and Marlborough Downs. At the foot of Fig Hill, a steep ascent of about one mile, and distant seven from Bristol, the keen and well-contested struggle began. A journey of 113 miles lay before the party, to be accomplished with no other draught power than the wind, which was now blowing a fine gale of at least five-and-thirty miles an hour. The signal was given: each company dashed gaily forward—some to unfurl their Buoyant Sails, others to run out the lines attached to their respective cars. The standard-ballast for each kite was rapidly sent in advance, the canvas raised to the wind, the brace-lines and mainstay instantly prepared, and at the signal of the bugle a general rush to each equipage took place. A fair start, and now we are under weigh. Right in our front lies the steep ascent which has baffled the muscle and wind of many a good steed; ours heed it not. The brace-line is hauled tight, and each draught sail brought to give its utmost power, and the struggle increases in animation. The air is filled with mimic life, for six mighty birds—the soaring kites—are desperately struggling to escape from the leash; but the effort is vain, and our advance is rapid. The first Charvolant that reached the brow of the hill was the heaviest, manned, as we

have before said, by a party of six. The two lighter cars, Pegasus and Chimoa, lay abreast about thirty yards in the rear; when now after gaining the summit, as we began to descend a slight incline, both these began to press the advance, and after running about half a mile farther, shot ahead with tremendous velocity. This advantage they kept until the party began to ascend a considerable rise leading out of the village of Ford, about eight miles from the starting point. Here again the flag of the heavier craft floated proudly over its baffled competitors, who dropped considerably in the rear. We now cast a rapid glance at the chronometer, and found our pace had been, up hill and down, at the rate of twenty-five miles an hour. Chippenham now lay not far before us, which we were anxious to reach in advance of our competitors, because it involved an important advantage, which our opponents would not have failed to seize, thereby throwing us possibly in the rear by a quarter of an hour.

The town of Chippenham lies nearly at right angles with the general line of the great London road; a tall spire stands most awkwardly on the left hand, at such an elevation as to require some patience, and the nicest skill in manœuvring, to clear the vane. It was evident, therefore, that whichever party should succeed in reaching this point first would have gained a considerable start. It was our good fortune to lead into Chippenham, and we had no reason to regret our success, for it again gave us the advantage in Calne, a town six miles in advance. Here the main streets are still more unfavourable, being not only at right angles with the general direction of the London road, but very



"THERE THE STEER[illegible] THE TURF."

narrow in the most critical part. Our brace-lines, how ever, were in most efficient action, and, by effecting a powerful traverse of the kites to the starboard, and by keeping them steadily on that tack, we cleared every obstacle, and soon found ourselves on the edge of the high Chevil Downs, near Marlborough. Here we paused for a few moments, to see what had become of our competitors in the race. We looked back, and could distinctly perceive their flags advancing rapidly, though still evidently at the distance of two or three miles; with this warning, however, not a moment was to be lost, if we were still to head them into Marlborough. The bugle once more sounded, and the equipage again advanced at a rapid rate.

About four miles from the edge of the Chevil Downs, we encountered a most unwelcome obstacle in a post-chaise and pair, which, though prime cattle, were a mere lumber in the road, compared with the tremendous pace we were then going —certainly not less than five-and-twenty miles an hour. The post-boy, however, determined to jockey us; he now traversed to the right, now the left, of the road, just as he perceived we were about to pass him. We were thus effectually blockaded, at a time too when, to our great vexation, we perceived the party in the rear gaining on us so rapidly as to threaten coming up with us in a very few minutes. The occupant of the chaise seemed to enjoy our dilemma, and evidently prompted the postilion in his clever manœuvres. At length, watching an opportunity, no sooner did a spot present itself where the downs sloped smoothly into the road, than the steersman dashed boldly out upon the turf, and, accompanied by the sound of the bugle,

in one second our carriage shot ahead, and left our disappointed jockey in the rear. It may be mentioned here, that since the withdrawal of the public conveyances from the turnpike roads, a greater facility is afforded for the delightful recreation attending excursions in the Charvolant, for miles may now be passed on many of our high roads without meeting a vehicle of any description, consequently scarcely any interruption occurs in this respect—indeed, in many places the grass is growing very luxuriantly, and the animals which formerly sweated and foamed whilst traversing these now old-fashioned courses might obtain a plentiful repast on that very ground which they were continually tearing up in their passage through the country. Notwithstanding, we succeeded in shearing off from this troublesome manœuvrer, we had lost valuable time, which, with the brisk equipage in chase, was not to be recovered. In addition, the road again began to incline considerably, a disadvantage which our carriage was not long in finding out. Accordingly, just as we were about to enter Marlborough, our indefatigable chase again came up with us. The whole party now pulled up, and it was agreed, after the very splendid run of the morning, to postpone our further progress till the evening, when we were again to get under weigh. Meanwhile, we spent a very cheerful afternoon with a friend in the town, and, after waiting till the evening breeze, the whole party again set forward; this time, however, without any rivalry, and keeping each other company. As it was now getting dark, the night signals were considered necessary; they were speedily adjusted, and we were once more in motion. Nothing could exceed the

stillness of nature; not a breath moved amongst the leaves, and an unusual calm reigned around. Notwithstanding this preternatural quiet, a steady and active breeze was flowing aloft. The kites kept a position so uniform, as to convey the idea of being nailed in their respective places, while, from the even tension of the cordage, sounds resembling the plaintive breathings of the æolian harp proceeded. The pace of the equipage was now about 18 miles an hour, and our rapid movements demanded a vigilant look out. The bugle was in frequent requisition, and of essential service. During this night journey, soon after the stars began to shine out, an appearance frequently presented itself, calculated to attract the attention of the scientific. Meteors continued to pass in an uniform direction across the atmosphere, traversing the cordage from right to left; very possibly the current of electric fluid was disturbed by the rapid passage of so slender a body as the cordage. After a delightful run, we determined to close our day's adventures by bivouacing out till the dawn, in lieu of running into London. We, accordingly, furled our Buoyant Sails, reeled the cordage, and repaired to a stack of fragrant clover-hay, still in process of making. There, with our kites once more spread for an awning, and their oval ballast tails for a nightcap, we slept peacefully till awaked by the gay carol of the early lark.

One of the most pleasurable excursions made by the Charvolant was in the summer of 1846, when the author's family, numbering 16 persons, proposed to visit London. Three carriages, with their ærial steeds, were prepared for the purpose, under the guidance of a skilful charioteer, the equipages having

been preceded by a light waggon, containing a tent and provisions for three days, it having been arranged that the party should halt and partake of refreshment *al fresco.*

At five o'clock on a most beautiful morning the party started on their trip, passing through the old city of Bristol, to the amusement of those whose early habits had brought them from their homes. In a very short time, the kites were brought into full action, and after a delightful run of about sixteen miles we arrived at the pretty village of Ford, where it was agreed we should breakfast—for although our steeds were as fresh as when we first started, and needed neither hay nor water, much less a feed of oats, we felt the influence of the morning air, and the excitement which always attends this delightful mode of travelling, for our appetites were such that we doubt if any alderman of any city could have competed with us on this occasion. The kites having been made fast, and the carriages drawn up at a cottage by the road-side, we solicited the services of the good woman of the house, who shortly put the kettle on, that we might all have tea. Ham and beef, chicken and eggs, were in constant request, and the anticipation of a journey gave increased energy to our exertions for satisfying the desires of the inner man. The repast being concluded, and feeling exhilarated by its effects, we entered our respective carriages with renewed spirits, and started away for Marlborough Forest, in which neighbourhood we intended to bivouac for the night. We arrived at the Forest about seven o'clock in the evening, having loitered on the road in order to visit some friends. The evening was most beautiful, and those

only who have formed a gypsey party of this kind can estimate the pleasures attending it. Our sails were soon hauled down, and served in some respect to form a screen in connection with our tent, which, when erected, afforded all the accommodation the travellers desired. The calm stillness of the summer evening—the delightful position we had chosen for our encampment, produced the most pleasurable feelings.

After a short time, supper was prepared, and all did ample justice to the meal, for it has always been found that no exercise serves to promote the appetite so powerfully as a run with the kites. During our repast, we were enlivened by the entertaining drollery of the jolly landlord of a neighbouring public-house, who had brought us some of his excellent Wiltshire beer. Being fond of music, and having a famous voice, he sang us some capital old English songs, which resounded through the Forest, and the key-bugle being beautifully played by one of the party, we had a very tolerable amateur concert, and thus the time passed away merrily, until, through the exertions of the day, one and the other felt the influence of the drowsy god. Two of the young men proposed to keep guard during the night, providing themselves with a good old Havana, the remainder of the party betook themselves to rest, and they declared the next morning that they had never slept more comfortably, or felt more refreshed.

Early on the following day we pursued our journey. The kites were soon attached to their respective carriages, and, bidding farewell to the jovial host of the Castle, we made a famous start. We encountered some few difficulties on the

road, in the shape of high trees, steeples, and chimnies; but, by tact and perseverance, we subdued them. In passing through large towns, it may be imagined that our novel equipage attracts considerable attention, and as some little delay attends our movements on these occasions, the inhabitants have ample time to make their remarks; but on every occasion the most marked consideration has been bestowed on the travellers. It has frequently happened that, on clearing the streets and dashing once more into the open road, our carriages have been followed by numerous horsemen, who had hastily saddled their steeds, in order to see a little more of our proceedings; but if the wind is brisk these followers are very soon left in the rear, a gallop with the hounds being much less trying than chasing the Charvolant. Our statements have appeared ridiculous to those gentlemen, when manœuvring amongst the chimney-pots; but when allowed a clear start, the correctness of the prognostications were substantiated, much to the amazement of our equestrian friends. Of course, those who were on foot took a hasty leave, only witnessing the start, and keeping their eyes and mouths very wide open during the operation. It has happened on several occasions, in the course of our excursions, that we have pulled up at a road-side public-house in the dusk of the evening, when the kites were hidden from the view. Hearing the sound of wheels, the hostler very naturally rushes out (probably from the lighted tap-room) to attend to his duties, and approaches, as he supposes, the head of our horse, but finds no *trace* of that moving power; his bewilderment is most laughable, and he hardly regards our order for some of the best Wiltshire beer. He

scratches his head, but does not appear at all satisfied with his calculations as to our mode of travelling. After giving rather a doubtful glance at the occupants of the carriage he proceeds for the beer, and addresses the landlord with, "Measter, a quart of beer vor zummut at the dooer." He appears again, and having recovered his first surprise awaits with a credulous smile to see how we are going to move off. The beer being paid for, the drag is uplifted, the power-line of the draught-kite braced up, and dash goes the carriage, leaving the poor man to form his own opinion on the matter, which, we understood afterwards, resulted in the exclamation, "That if he had never zeed the devil afore, he zeed un thic night however."

These expeditions were succeeded by an interesting aquatic excursion, in which an opportunity was presented for making numerous experiments. The Bristol Channel was the scene of this novel and most instructive marine trial. A trim yacht conveyed the whole party to the steep Holmes, on which, after landing, and taking with us the necessary tackle, we proceeded to raise the kites. Meanwhile, in order to assist the traverse which we contemplated, a bridle was placed a little before mid-ships, with a running block, so as to enable every advantage to be taken in wearing. Canvas buckets, also, of a peculiar construction, were prepared to throw overboard by the stern, should the speed be too great for the back-water; or, should it be considered desirable to bring the yacht up, a grappling iron was specially prepared for this purpose.

A fine gale was blowing, and we were soon under weigh. It was quickly found that the yacht answered her helm admirably

under these floating sails, and that her bows, raised as they were above the ordinary pressure of the canvas, cut the water with unusual keenness. It was not long before an opportunity presented itself for testing the speed of the little craft under her new trim. Not two miles ahead of us was sailing a beautiful little cutter, skimming lightly over the water. In her case, however, a proof was given that the ordinary spread of canvas has no chance of competing with the Buoyant Sail, if the due power of draught be applied. The breeze now began to freshen, and our little bark gaily careered over the waves, continuing rapidly to draw ahead. It was not long before we were alongside; and the cutter, not willing to be overcome by this novel mode of navigating the sea, spread additional canvas, and for a time succeeded in keeping us company. This advantage, however, she did not hold long, for our party soon succeeded in throwing aloft another sail, which was attached to the cordage of that already flying. This addition of strength soon told effectually. Notwithstanding every exertion of the crew of the cutter, they began to drop quickly astern, and after a run of two hours more there was little to be seen of our late competitor. Our cruise continued for three weeks, during which we visited the coasts of Devonshire and Wales, thoroughly convinced of the practicability and superior advantages of the invention. One of the party suggested a novel application of the kite-line—on which, at stated distances, were fixed small reeving blocks, through which passed fishing-lines, one end of which was carried down to the yacht. We had thus a quantity of tackle at work at once, and our success was most unexampled.

It would be endless to enumerate all the experiments made, and amusing adventures run through, during the course of our Channel cruise. At one time careering gaily over the sparkling waters; at another, ashore amongst the romantic scenery that adorns the Welsh coast, or the rich and verdant glades of Devon. During our brief experiments we twice encountered heavy gales, which, however, had little effect on the trim of the yacht, for, in wearing on either tack there was no depression of the boat's edge, as in the case of the ordinary sail, and the stronger the gale blew the more benefit did the boat feel, for her bows, instead of being plunged more deeply in the water, were now buoyantly supported by the additional power of the wind.

The party returned, fully convinced that there could not be so efficient and safe a mode of navigating during heavy weather, as by means of these Buoyant Sails. In the summer of this year the same party traversed Salisbury Plain, a great part of Gloucestershire, Berkshire, and Oxfordshire, and the variety of amusing adventures which gave a zest to their journey would form a most entertaining volume. On one occasion they were most hospitably entertained by a gentleman, with whom they had no previous acquaintance, who was so highly delighted with the extreme simplicity and efficiency of the equipage, that he begged the favour of a ride, that he might thus be able to declare, from his own testimony, the truth of this much-doubted mode of travelling. While at lunch, he informed us that he had good cause to remember Kites, for when a boy he had lost a noble property by unfortunately fitting up one of these toys with a title-deed, of the value of which he had then not

the slightest idea; and that, in consequence, when a litigation on the property in question arose, the deed was not forthcoming, and the estate was lost to him. We could not help remarking, however, that his hospitality was as great as his philosophy. After our repast, our kind host joined the party, which at once set forward again. On this trip a singular instance of the power of the Buoyant Sail was given. At a sharp angle in the road stood a tall elm-tree—we were then dashing along at the rate of twenty miles an hour—and being rather careless in manœuvring our cordage, the line came in contact with a stiff knotted branch of considerable size, at the top of the tree. The struggle between the cordage and the tree was not of long duration; the momentum given by the rapid pace of the carriage, and the line of flight, still maintained by the Kite, was irresistible: the branch shook violently for a moment, and then, with a loud crash, broke from the tree and glided down the line to the carriage—our trophy was, of course, soon deposited at the road-side. This rencontre would have been injurious to the brace-lines of the kite, to which latter one of them might possibly have given a cant right or left, had not these important lines been safely enclosed in a tube of webbing. Thus, all irregular action upon the Kite's surface was prevented, and the strain borne equally by the cordage and webbing. On another occasion, a small party of three were not so fortunate. The carriage in which they were riding was light, their tackle and kites slender. While dashing along at a similar pace, they thoughtlessly encountered a stiff and crooked branch of a tall elm. Their capture was complete. The lightness of the carriage and

the slight strength of the Kites, in this instance, gave them no chance. In an instant the carriage wheeled round to the road-side, dashed up the bank, dislodged the riders, and left the carriage ridiculously suspended in the air, with the wheels still revolving. To add to the amusement of the party, who were not at all hurt, a donkey, just before quietly grazing by the road-side, trotted up to them with a most compassionate bray, as they were still lying upon the ground. The equipage, however, was soon disengaged, and again set in motion. We would here remark, that there is not the slightest necessity for such Quixotic adventures; a little more patience, and a little more skill, would have avoided such a dilemma. It is indispensable to have the cordage of the very best material and workmanship, with a strength considerably more than adequate for general travelling; because it has been found that the wind occasionally is subject to a rapid rise during a single hour, in which, if there be not extra strength in both tackle and cordage, these ærial steeds would soon run away, leaving both carriage and riders far behind. An instance of this sort occurred during the progress of the invention. When travelling by night with a strong breeze, a heavy gale suddenly came on: just at this moment, it was necessary to check the Charvolant, as there were several carts directly in our front. The sudden pull-up, coming just as the rush of the wind came, was too much for the strength of ordinary tackle, and the lines in consequence parted. In an instant the Kites, with the signal-lights still visible, drifted through the air, but both soon disappeared, much to the disappointment of the party. Accidents, however, such as these, are

now impossible, from the superior manufacture of the cordage, which will set even a hurricane at defiance. Determined, however, not to be balked of their ride, if possible, the whole party now set off on an exploring expedition after their runaway team. A search of two hours brought them no nearer to their object, and they were obliged to return home (distant about two miles) kiteless, though with an appetite much sharpened. On the following day they once more set forward upon their voyage of discovery, and were fortunate enough to succeed in recovering their flighty steeds. Meanwhile, a singular adventure had been the consequence, giving rise to most laughable results. After soaring through the air for upwards of a mile, the Kites finally lodged upon the roof of a house, the ballast, tail, and cordage, hanging down to the ground. About midnight, the people within, were awakened by strange noises—which presently became louder and louder. Alarm soon spread throughout the family—robbers must be about the premises. Now the noise increases—the whole house is on the alert, and swords and guns are brought into requisition. They patrol the circuit of the building, and one of the party falls in with a line hanging down from the parapet; by this way, then, the robbers have entered, and their hammering is distinctly heard on the roof of the house. Hither then, all courageously repair, and make a grand rush upon the leads. Here the alarming mystery is disclosed, and nothing but a harmless Kite is seen flapping its wings against the roof. So much valour, perhaps, has never been so lavishly expended. This was a lesson, however, which had its advantages, producing superior strength in the whole tackle, and increased

skill in manœuvring, so that a similar casualty never afterwards occurred. Every excursion now reduced the system to greater perfection, bringing the Kites and carriage under the most perfect control. Nor was less progress made in the experimental department, when large weights were required to be raised or transposed. While on this subject, we must not omit to observe, that the first person who soared aloft in the air, by this invention, was a lady, whose courage would not be denied this test of its strength. An arm chair was brought on the ground; then, lowering the cordage of the Kite, by slackening the lower brace, the chair was firmly lashed to the main line, and the lady took her seat. The main-brace being hauled taut, the huge Buoyant Sail rose aloft with its fair burden, continuing to ascend to the height of one hundred yards. On descending, she expressed herself much pleased at the easy motion of the Kite, and the delightful prospect she had enjoyed. Soon after this, another experiment of a similar nature took place, when the inventor's son successfully carried out a design not less safe than bold—that of scaling, by this powerful ærial machine, the brow of a cliff, two hundred feet in perpendicular height. Here, after safely landing, he again took his seat in a chair expressly prepared for the purpose, and, detaching the swivel-line which kept it at its elevation, glided gently down the cordage to the hand of the director. The Buoyant Sail employed on this occasion was thirty feet in height, with a proportionate spread of canvas. The rise of this machine was most majestic, and nothing could surpass the steadiness with which it was manœuvred, the certainty with which it answered the action of the

braces, and the ease with which its power was lessened or increased. The cordage which took the strain of this powerful engine consisted of two lines, each about half an inch in diameter. The ends of these were securely fastened to a large tree, to give increased steadiness to the machinery, as well as to do away with the necessity of many men to withstand its enormous power. Subsequently to this, an experiment of a very bold and novel character was made upon an extensive down, where a large waggon with a considerable load was drawn along, whilst this huge machine at the same time carried an observer aloft in the air, realising almost the romance of flying. For night escalade, this powerful engine, as already intimated, would be most effective; in fact, the various purposes to which it is applicable will be best appreciated by those whose energy and youth open to them an honourable career by land or sea. To relate the numerous adventures which attended the various expeditions with the Charvolant might fill a large volume: but as it was our object solely to point out the application, tendencies, and capabilities of the invention, we shall for the present postpone our narrative, fully convinced that the powers already developed will be found of paramount importance by land and sea.

THE END.

APPLICATIONS RESPECTING THE CHARVOLANT

Addressed to Mr. GEO. M. GILBERT, EALING, Middlesex, will be duly attended to, and where the Kites for Travelling may be seen in operation.

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